



# Mine-Resistant, Ambush-Protected (MRAP) Vehicles: Background and Issues for Congress

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## Summary

In late 2007, the Department of Defense (DOD) launched a major procurement initiative to replace most uparmored High Mobility, Multi-Wheeled Vehicles (HMMWVs) in Iraq with Mine-Resistant, Ambush-Protected (MRAP) vehicles by FY2009. MRAPs have been described as providing significantly more protection against Improvised Explosive Devices (IEDs) than uparmored HMMWVs. DOD's decision to acquire a new, smaller MRAP variant for use in Afghanistan; MRAP mechanical, logistical, and readiness concerns could be potential policy issues for congressional consideration. This report will be updated.

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## Background

MRAPs are a family of vehicles produced by a variety of domestic and international companies that generally incorporate a “V”-shaped hull and armor plating designed to provide protection against mines and improvised explosive devices (IEDs). DOD originally intended to procure three types of MRAPs.<sup>1</sup> These included Category I vehicles, capable of carrying up to 7 personnel and intended for urban operations; Category II vehicles, capable of carrying up to 11 personnel and intended for a variety of missions such as supporting security, convoy escort, troop or cargo transport, medical, explosive ordnance disposal, or combat engineer operations; and Category III vehicles, intended to be used primarily to clear mines and IEDs, which are capable of carrying up to 13 personnel. The Army and Marines first employed MRAPs in limited numbers in Iraq and Afghanistan in 2003, primarily for route clearance and explosive ordnance disposal (EOD) operations. These route clearance MRAPs quickly gained a reputation for providing superior protection for their crews, and some suggested that MRAPs might be a better alternative for transporting troops in combat than uparmored HMMWVs.

## DOD’s MRAP Requirement<sup>2</sup>

In 2008, DOD approved the following MRAP acquisitions quantities by service and for other uses: Army, 12,000; Marine Corps, 2,225; Navy, 544; Air Force, 558; U.S. Special Operations Command (USSOCOM), 378; and ballistic testing, 133, for a total of 15,858 vehicles of all categories.

## MRAP Survivability<sup>3</sup>

DOD officials have stated that the casualty rate for MRAPs is 6%, making it “the most survivable vehicle we have in our arsenal by a multitude.” By comparison, the M-1 Abrams main battle tank was said to have a casualty rate of 15%, and the uparmored HMMWV, a 22% casualty rate.

## MRAPs Deployed to Iraq and Afghanistan<sup>4</sup>

On February 20, 2009, DOD announced that it had fielded its 10,000<sup>th</sup> MRAP in Iraq. Since the first MRAP was fielded in April 2007, more than 11,700 MRAPs have been fielded across CENTCOM which suggests that about 1,700 of those 11,700 MRAPs had been sent to Afghanistan as of February 2009. DOD also noted that they had trained more than 22,000 personnel to operate MRAPs since April 2007. Because ground convoys into Afghanistan have

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<sup>1</sup> U.S. Government Accountability Office (GAO) Report, Subject: Rapid Acquisition of Mine Resistant Ambush Protected Vehicles, July 15, 2008.

<sup>2</sup> Ibid.

<sup>3</sup> Information in this section is taken from DOD Press Transcripts, “DOD News Briefing with Geoff Morrell,” May 15, 2008.

<sup>4</sup> Information in this section is taken from an American Forces Press Service News Article, “Military Fields 10,000<sup>th</sup> Mine-Resistant Vehicle to Troops in Iraq,” February 20, 2009.

been frequently attacked, MRAPs are being airlifted in Afghanistan along with other sensitive vehicles and equipment.<sup>5</sup>

## **Disposition of MRAPs in Iraq<sup>6</sup>**

As U.S. forces begin drawing down in Iraq, the Army and Marines plan to put the majority of MRAPs into prepositioned stocks at various overseas locations, ship a number back to the United States for training, and place a number into logistics and route clearance units. Out of the Army's eventual 12,000 Iraq-based MRAPs, the Army plans to use only 2,675 in operational units. The Army plans on allocating 702 MRAPs for training in addition to the 50 MRAPs already designated for training drivers. Another 1,400 MRAPs will be incorporated into route clearance units and some MRAPs will likely be given to or sold to Iraqi forces. The rest (possibly as many as 7,000) will be placed in world-wide prepositioned stocks. The Marines plan to keep only about 800 of their 2,225 MRAPs with operating forces, with the rest being sent to prepositioned stocks.

## **Growing Need for MRAPs in Afghanistan<sup>7</sup>**

Roadside IEDs are estimated to be causing about 75 percent of coalition forces casualties in Afghanistan, which is an increase of 25 percent from 2007, when it was estimated that IEDs were responsible for 50 percent of all casualties. This IED rate of casualties for January and February of 2009 was reported to be higher than the rate in Iraq when fighting was at its worst. NATO officials in Afghanistan have noted that IEDs are becoming more powerful and U.S. commanders in Afghanistan are asking for 3,300 MRAPs but it is suggested that the Pentagon could end up buying up to 10,000 lighter-weight MRAPs for Afghanistan if the U.S. increases its force level to 60,000 personnel over the next couple of years.

## **A New MRAP Version for Afghanistan**

In the summer of 2008, DOD began to examine the possibility of developing and procuring a lighter-weight, all-terrain capable MRAP variant to address the poor roads and extreme terrain of Afghanistan. This new vehicle - designated the MRAP-All-Terrain Vehicle (M-ATV) - is intended to weigh between 7 to 10 tons (as opposed to the 14 to 24 tons of the current MRAP variants) and have better off-road mobility.<sup>8</sup> In early December 2008, a Request for Proposal (RFP) was issued with DOD officials suggesting that as many as 10,000 M-ATVs could be procured, but a more likely estimate was 2,080 vehicles.<sup>9</sup> This requirement for M-ATVs is in addition to the original 15,858 MRAPs approved by DOD in 2008. The Pentagon planned to award up to five contracts

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<sup>5</sup> Jason Sherman, "Strykers, MRAPs Airlifted into Afghanistan to Avoid In-Transit Ground Attacks," *InsideDefense.com*, February 27, 2009.

<sup>6</sup> Information in this section is taken from Emelie Rutherford, "Some Mine-Resistant Vehicles in Iraq Destined for Prepositioned Stocks, CONUS Training," *Defense Daily*, March 17, 2009 and Marjorie Censer, "Army to Move MRAPs Into Training, Route Clearance, Logistics Units, *InsideDefense.com*, March 23, 2009.

<sup>7</sup> Information in this section is taken from Tom Vanden Brook's, "Push for MRAPs in Afghanistan," *USA Today*, April 3, 2009 and "Need Rises for Lighter MRAPs," *USA Today*, February 4, 2009.

<sup>8</sup> Kris Osborn, "DOD Doubles Potential Buy of Lighter MRAPs," *Defense News*, November 17, 2008.

<sup>9</sup> Emelie Rutherford, "Pentagon Eyeing \$1.5 Billion Request to Hill for New All-Terrain MRAP Effort," *Defense Daily*, December 3, 2008.

for test vehicles in the spring of 2009 and a final production contract to a single firm in May 2009, although DOD has not ruled out awarding a final contract to more than one firm.<sup>10</sup> DOD would like to make a final award to a single firm to avoid the logistical problems encountered in the MRAP program where MRAPs came from a variety of firms.<sup>11</sup> DOD also hopes to do a better job of pricing M-ATVs, as the Pentagon Inspector General determined that DOD had likely overpaid \$45.7 million on some 2,900 MRAPs because they failed to properly determine if contract prices were “fair and reasonable” for the first nine MRAP contracts awarded.<sup>12</sup> The total cost for the M-ATV program is estimated by some to be approximately \$ 3 billion, with \$1.5 billion coming from the FY2009 War Supplemental and the other \$1.5 billion from an expected request to Congress.<sup>13</sup> If DOD receives requested funding and production proceeds as intended, the first M-ATVs could be deployed to Afghanistan in the fall of 2009.

## **Status of M-ATV Effort**

In January 2009, Navistar, a Force Protection and Michigan-based General Dynamics Land Systems (GDLS) team, Oshkosh, General Dynamics Land Systems- Canada (GDLS-C), and BAE Systems were said to have submitted written bids and armor samples.<sup>14</sup> In late February 2009, prototypes were delivered to Aberdeen Proving Grounds for evaluation with a contract award scheduled for June 2009. On March 30, 2009, Navistar reportedly filed a protest citing an “unspecified technicality in the government’s evaluation of its proposal” and GDLS-C announced that they were dropping out of the M-ATV competition.<sup>15</sup> Navistar withdrew its protest in early April after the contract was amended by program officials and the award of a single production contract is still expected in June 2009.<sup>16</sup>

## **MRAP Operational Concerns**

### **MRAP Mechanical, Logistical, and Readiness Issues**

At the program level, GAO has noted that “operating, maintaining, and sustaining a fleet of 15,000 fielded vehicles by at least five different vendors could present significant challenges.”<sup>17</sup> Secretary of Defense Gates acknowledged that there are a number of mechanical problems associated with the MRAPs, attributing some of these difficulties to the rapid acquisition of the

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<sup>10</sup> Ibid.

<sup>11</sup> Rebekah Gordon, “Brogan: Step-Ladder Pricing, Cumulative Volume Pricing in M-ATV Contract,” *InsideDefense.com*, February 5, 2009.

<sup>12</sup> Ibid.

<sup>13</sup> Emelie Rutherford, “Pentagon Eyeing \$1.5 Billion Request to Hill for New All-Terrain MRAP Effort,” *Defense Daily*, December 3, 2008.

<sup>14</sup> Rebekah Gordon.

<sup>15</sup> Marjorie Censer, “Navistar Files Protest in MRAP ATV Competition; GDLS-C Out,” *InsideDefense.com*, April 2, 2009.

<sup>16</sup> Marjorie Censer, “Navistar Withdraws M-ATV Protest After Corrective Action Taken in RFP,” *InsideDefense.com*, April 9, 2009.

<sup>17</sup> U.S. Government Accountability Office (GAO) Report, Subject: Rapid Acquisition of Mine Resistant Ambush Protected Vehicles, July 15, 2008.

vehicle.<sup>18</sup> Secretary Gates noted that DOD did not ensure “that the supply line was full before we deployed them,” and also made reference to problems with the MRAP’s fire extinguisher system, problems with suspension, and the vulnerability of its axles.<sup>19</sup> Another concern is that, at present, much of the MRAP maintenance is being performed by contractors as DOD adjusts its long-term maintenance strategy so that maintenance will be performed by military personnel. It was reported in the summer of 2008 that one in five MRAPs in Iraq were out of service (which correlates to an 80% readiness rate) primarily due to a lack of repair parts.<sup>20</sup> The Pentagon disputed this claim and maintained that its operational readiness rate for MRAPs in Iraq is almost 92%.<sup>21</sup> Sufficient repair parts may also be a readiness concern in Iraq and Afghanistan, as DOD admits it is trying to “catch up” in terms of MRAP repair parts.<sup>22</sup> In the past, shortages of heavy duty transmissions, engines, axles, and tires have been cited as MRAP readiness issues. These parts shortages may be exacerbated in the case of Afghanistan, where vulnerable ground supply lines have necessitated a greater reliance on resupply by air transport. While plans to place a significant portion of the MRAP fleet into prepositioned stocks might seem to alleviate operational readiness concerns, MRAPs that are placed into prepositioned stocks will be required to be kept at a high state of readiness.

## Potential Issues for Congress

### MRAP Disposition

Recent testimony by Army and Marine Corps leadership suggests that almost 8,000 of the almost 16,000 MRAPs are destined for an inactive status in the prepositioned stocks of those Services. As MRAP fielding began in 2007, many of these vehicles destined for prepositioning are likely less than two years old, and it can be argued that this is an inadequate return on investment. On April 6, 2009, Secretary of Defense Gates announced that he intended to significantly restructure the Army’s Future Combat System (FCS) program.<sup>23</sup> As part of his justification to restructure FCS, Secretary Gates was concerned that the FCS program did not include a role for MRAPs and implied that there needed to be a greater role for MRAPs in the Army’s vehicle modernization plan. It is not known if current Army and Marine Corps plans to inactivate upwards of 8,000 MRAPs constitutes the role that Secretary of Defense Gates envisions for these vehicles, but it might prove beneficial to clarify both DOD’s and the Service’s positions on this potential point of contention.

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<sup>18</sup> Marjorie Censer, “Gates: Military Fixing MRAP Problems As Fast As We Can,” *InsideDefense.com*, December 19, 2008.

<sup>19</sup> Ibid.

<sup>20</sup> Suzanne Malveaux, “One Out of Five MRAPs in Iraq is Out of Commission,” CNN, July 8, 2008.

<sup>21</sup> Jason Sherman, “MRAP Operational Readiness Rates Exceed 90 Percent Goal; Nine Trucks Destroyed,” *InsideDefense.com*, July 11, 2008.

<sup>22</sup> Ibid.

<sup>23</sup> Information in this section is taken from a transcript of Secretary of Defense Robert M. Gates Budget Press Briefing, Arlington, VA April 6, 2009. For detailed information on the Future Combat System see CRS Report RL32888, *The Army’s Future Combat System (FCS): Background and Issues for Congress*, by Andrew Feickert.

## **M-ATV Program**

DOD leadership has suggested that they have learned a number of lessons from the MRAP program that will play a role in how they structure and execute the M-ATV program.<sup>24</sup> These lessons include contractual, order quantity, and pricing lessons as well as safety lessons—including design features to address frequent MRAP rollovers. Before DOD awards M-ATV production contracts, perhaps as early as June 2009, a detailed discussion between DOD and Congress regarding these lessons learned and how their incorporation will improve M-ATV effectiveness, readiness, and safety, as well as how these lessons could result in potential overall program cost savings might be beneficial.

## **MRAP Maintenance, Logistics, and Readiness**

GAO has expressed concern that “operating, maintaining, and sustaining a fleet of 15,000 fielded vehicles by at least five different vendors could present significant challenges.”<sup>25</sup> These challenges will likely be exacerbated by the possible procurement of thousands of M-ATVs. While DOD contends that there is a degree of commonality between MRAPs from various vendors, there are likely considerable logistics and maintenance issues resulting from the mixed MRAP fleet. The rugged and extreme Afghan terrain might also put a greater strain on MRAPs than Iraq did, further increasing readiness issues. These issues could have significant readiness and cost ramifications that Congress might wish to review with DOD. While DOD’s long-term goal is to transition from contractor to military maintenance for MRAPs, contractors are responsible for a great deal of MRAP maintenance activities. Are there sufficient contractors in Iraq and Afghanistan to support the ever-growing MRAP fleets? Is the quality and availability of contractor MRAP maintenance comparable to military maintenance and is this a significant factor in MRAP readiness? DOD is currently “catching up” in terms of acquiring and stockpiling MRAP repair parts. Is this shortage a function of funding, the ability of the respective MRAP manufacturers to produce sufficient stocks of repair parts, of programmatic priorities, or a combination of factors? How do the resupply problems associated with transiting Pakistan affect MRAP maintenance, logistics, and readiness in Afghanistan—particularly if thousands of additional vehicles will be deployed in theater over the next few years? Will repair parts and MRAP and M-ATV components need to be airlifted into theater due to enemy interdiction of ground resupply routes?

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<sup>24</sup> Kris Osborn, “MRAP Breakthrough,” *Defense News*, October 6, 2008 and “Implementing Lessons from MRAP,” *Defense Update*, March 2009.

<sup>25</sup> U.S. Government Accountability Office (GAO) Report, Subject: Rapid Acquisition of Mine Resistant Ambush Protected Vehicles, July 15, 2008.

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